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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/966,953	09/27/2001	Kevin Collins	10006728-1	4853

7590

12/08/2005

HEWLETT-PACKARD COMPANY  
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EXAMINER
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LE, DIEU MINH T

ART UNIT	PAPER NUMBER
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2114

DATE MAILED: 12/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/966,953	<b>Applicant(s)</b> COLLINS ET AL	
	<b>Examiner</b> Dieu-Minh Le	<b>Art Unit</b> 2114	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 22 September 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-9, 11-19, 21-26, 28 and 29 is/are pending in the application.
- 4a) Of the above claim(s) 10, 20 and 27 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9, 11-19, 21-26, 28 and 29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

**DETAILED ACTION**

1. This Office Action is in response to the amendment filed September 22, 2005 in application 09/966,953.
2. Claims 1-9, 11-19, 21-26 and 28-29 are again presented for examination; claims 10, 20, and 27 have been cancelled.
3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
4. Claims 13-19, 21-23 are again rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As per claim 13, "An apparatus for... comprising: computer readable storage media; computer readable program code..." is not clearly understood what type of claim? [apparatus or computer program product]. The examiner recommends that if the applicant is trying claim a product claim, the following example is suggest:

(A computer program product for monitoring performance of a storage device, the computer program product comprising a

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computer readable storage media and a computer readable program code stored on said computer readable storage media, comprising:

a. program code for ...)

Appropriate correction is required.

5. Claims 1-9, 11-19, 21-26, and 28-29 are again rejected under 35 U.S.C. § 103(a) as being unpatentable Parris (US Patent 6,408,406) in view of Parks et al. (US Patent 6,571,354).

This rejection is being applied for the same reasons set forth in the previous Office Action mailed 09/22/2005.

As per claims 1-9, 11-19, 21-26 and 28-29 see the previous office action for the teaching of Parris and Parks as well as the reason and motivation for combined.

Applicant asserted that Paris in combining with Parks failed to teach or suggest the following:

I. intercepting communication between a computer and storage device;

II. reallocating data to enhance continued operation of the storage device;

III. correcting measured access time for system overhead;

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- IV. determining an access location on said storage device and an access frequency for data stored thereon based on said intercepted communication; and determining an access location on storage device and an access duration for data stored thereon, based on intercepted communications;
- V. automatically backing up data stored on storage device ;
- VI. based on usage patterns of data;
- VII. defragmenting at least a portion of storage device.

Examiner respectfully transverses Applicant's argument as follows:

I. First, Examiner would like to bring Applicant attention to Paris's memory/hard disk testing and performance monitoring via SMART capability [col. 8, lines 8-33] and Park's storage network for protecting and replacing of storage devices before the failure happens [abstract, col. 1 - lines 16-21 and col.2 - lines 3-9]. Paris explicitly illustrated a communication between and among host computer system, disk drive, and non-volatile memory as depicted in figures 1-2. In addition, Park demonstrated the communication among servers/processor and storage devices as shown in figures 1-2.

Second, it is not true that Paris alone or in combining with Park failed to teach "intercepting communication between a computer and storage device" limitation. Paris clearly illustrated this capability via "data/failure detection, recovery, and encounter" functions [col. 4, lines 43-53] as well as data commanding for data receiving/transmitting [col. 4, lines 65 through col. 5, lines 12] including operational verification [col. 3, lines 1-6]. In addition, Park disclosed capabilities of detecting and monitoring performance of storage device including migrating data set to other storage devices [col. 3, lines 1-29]. It would have been very obvious to a person having ordinary skill in the art to apply Paris's encounter and Park's storage device detecting and monitoring features to perform applicant's intercepting communication between a computer and storage device in ensuring the computer storage device operated correctly and smoothly.

Third, it would have been very obvious to a person having ordinary skill in the art to realize that the "intercepting ...." Limitation is well known in the computer arena via "interrupting, testing, voting, etc... capabilities. This is very clearly to a person having ordinary skill in the art to realize that this limitation is old and readily for use in the data

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memory system, more specifically in the storage device performance and monitoring area.

II. First, it is not true that Paris alone or in combining with Park failed to teach "reallocating data to enhance continued operation of the storage device" limitation. Paris explicitly capabilities of data/failure detecting, correcting, retrieving, reassigning data set, errors rate attributes, etc... [col. 7, lines 7-13 and col. 8, lines 7-33] in ordering to offer better performance of storage device [col. 7, lines 30-40]. In addition, Park clearly teaches "**reallocation data in responding to a result of suffering from reduced performance of storage device to enhance memory performance**" [col. 5, lines 3-11]. Paris and Park clearly demonstrated applicant's limitation.

Second, it would have been very obvious to a person having ordinary skill in the art to realize that Paris and Park's disclosures goals are to monitor, detect, and correct memory failures in order to enhance the memory operation. It is very intuitive to a person having ordinary skill in the art to find this so obvious limitation.

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Third, by apply the *reallocation data in responding to a result of suffering from reduced performance of storage device* as taught by Parks in conjunction with the method for testing defective disk drive storing performance parameters for continuously logging problem during the operation of the disk drive as disclosed by Parris in order to enhance the storage device, memory programming efficiency (i.e., erasing, programming, accessing, processing, etc...). One of ordinary skill in the art would have been motivated to do so to improve the memory response time (i.e., data access to and from memory devices and computer devices), memory space allocation, memory process controlling, etc... It would further obvious because by improving storage device or disk drive performance, the disk drive can be ensured of free of errors or failure in supporting its operation.

III. First, it is not true that Paris alone or in combining with Park failed to teach "correcting measured access time for system overhead" limitation. Paris explicitly capabilities of data/failure detecting, correcting, retrieving, reassigning data set, errors rate attributes, etc... [col. 7, lines 7-13 and col. 8, lines 7-33] in ordering to offer better performance of storage device [col. 7, lines 30-40]. Therefore, it would have



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been very obvious to a person having ordinary skill in the art to realize that Paris can easily perform the correcting measured access time as claimed by applicant. This is because Paris explicitly deal with memory performance measurement, comparing threshold performance, parameter assessment, etc... [ col. 2, lines 37-57].

Second, Park further illustrated the communication between and among host computer system, disk drive, and non-volatile memory as depicted in figures 1-2. Park emphasized the memory or storage device "mean time failure rate" [col. 2, lines 27-33], statistical performance [col. 3, lines 1-12], network diagnostics monitoring and support [col. 10, lines 42-46] including partitioning data storage [col. 10, lines 61-67]. Therefore, it would have been obvious to an ordinary skill in the art to realize that Park does teach applicant's limitation. By utilizing these capabilities, Park can conduct the correcting measured access time for system overhead in improving the memory access and data storage.

IV. First, it is not true that Paris alone or in combining with Park failed to teach "determining an access location on said storage device and an access frequency for data stored thereon

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based on said intercepted communication; and determining an access location on storage device and an access duration for data stored thereon, based on intercepted communications" limitations. Paris explicitly capabilities of data/failure detecting, correcting, retrieving, reassigning data set, errors rate attributes, etc... [col. 7, lines 7-13 and col. 8, lines 7-33] in ordering to offer better performance of storage device [col. 7, lines 30-40]. Therefore, it would have been very obvious to a person having ordinary skill in the art to realize that Paris can easily perform the "determining an access location ... Based on intercepted communication" as claimed by applicant. This is because Paris explicitly deal with memory performance measurement, comparing threshold performance, parameter assessment, etc... [ col. 2, lines 37-57]. Paris further demonstrated these capabilities via its memory read/write test, verification of the disk drive heads including its performance time accessing and testing [col. 3, lines 1-31].

Second, Park further illustrated the communication between and among host computer system, disk drive, and non-volatile memory as depicted in figures 1-2. Park emphasized the memory or storage device "mean time failure rate" [col. 2, lines 27-33], statistical performance [col. 3, lines 1-12], network

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diagnostics monitoring and support [col. 10, lines 42-46]  
including partitioning data storage [col. 10, lines 61-67].  
Therefore, it would have been obvious to an ordinary skill in  
the art to realize that Park does teach applicant's limitation.  
By utilizing these capabilities, Park can conduct the  
"determining an access location .... Based on intercepted  
communication" in improving the memory access and data storage.

V. It is not true that Paris alone or in combining with Park  
failed to teach "automatically backing up data stored on storage  
device " limitations. Paris explicitly capabilities of  
"continuously logging" information into the storage device for  
performance monitoring [col. 5, lines 26-52]. In addition, Park  
further demonstrated the capability of backup system used to  
support the data migration operation including its automatically  
function [col. 1, lines 60-67; col. 7, lines 29-40, and col. 26,  
lines 47-49].

VI. First, it is not true that Paris alone or in combining with  
Park failed to teach "based on usage patterns of data"  
limitations. Examiner would like to bring Applicant attention to  
Paris's memory/hard disk testing and performance monitoring via

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SMART capability [col. 8, lines 8-33] and Park's storage network for protecting and replacing of storage devices before the failure happens [abstract, col. 1 - lines 16-21 and col.2, lines 3-9]. Paris explicitly illustrated this usage pattern of data via user data band and regions [col. 1, lines 25-30; col. 5, lines 27-37 and col. 5, lines 53 through col. 6, lines 14]. In addition, Park disclosed the size of data set stored in storage device as well as the data block transferring among data storages [col. 3, lines 30-45]. Paris and Park clearly demonstrated applicant's limitation.

Second, it is very obvious to a person having ordinary skill in the art intuitively to realize that the "usage patterns of data" feature is well known in the data memory arena. This is because memory data is segmented and organized in data blocks or module within the memory storage device. The data is accessed and measured by its usage based so that errors can easily be detected and corrected in order to improve and enhance its continuous operation matter. It is very intuitive to a person having ordinary skill in the art to find this so obvious limitation.

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VII. First, it is not true that Paris alone or in combining with Park failed to teach "defragmenting at least a portion of storage device" limitations. Examiner would like to bring Applicant attention to Paris's memory/hard disk testing and performance monitoring via SMART capability [col. 8, lines 8-33] and Park's storage network for protecting and replacing of storage devices before the failure happens [abstract, col. 1 - lines 16-21 and col.2, lines 3-9]. Paris explicitly illustrated this usage pattern of data via user data band and regions [col. 1, lines 25-30; col. 5, lines 27-37 and col. 5, lines 53 through col. 6, lines 14]. In addition, Park disclosed the size of data set stored in storage device as well as the data block transferring among data storages [col. 3, lines 30-45]. Park further disclosed capability of data prioritization and partition in supporting the data backup and redundancy process [col. 7, lines 15-27 and col. 20, lines 8-19] Paris and Park clearly demonstrated applicant's defragmenting at least a portion of storage device limitation.

Second, it is very obvious to a person having ordinary skill in the art intuitively to realize that the "defragmenting at least a portion of storage device" feature is well known in the data memory arena. This is because memory data is segmented

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and organized in data blocks or module within the memory storage device. The data is accessed and measured by its usage based so that errors can easily be detected and corrected in order to improve and enhance its continuous operation matter. It is very intuitive to a person having ordinary skill in the art to find this so obvious limitation.

This is clearly that the combination of Paris and Parks do teach applicant's invention.

**Applicant's arguments filed 09/22/2005 have been fully considered but they are not persuasive.**

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 C.F.R. § 1.136(a).

A SHORTENED STATUTORY PERIOD FOR RESPONSE TO THIS FINAL ACTION IS SET TO EXPIRE THREE MONTHS FROM THE DATE OF THIS ACTION. IN THE EVENT A FIRST RESPONSE IS FILED WITHIN TWO MONTHS OF THE MAILING DATE OF THIS FINAL ACTION AND THE ADVISORY ACTION IS NOT MAILED UNTIL AFTER THE END OF THE THREE-MONTH SHORTENED STATUTORY PERIOD, THEN THE SHORTENED STATUTORY PERIOD WILL EXPIRE ON THE DATE THE ADVISORY ACTION IS MAILED, AND ANY EXTENSION FEE PURSUANT TO 37 C.F.R. § 1.136(a) WILL BE CALCULATED FROM THE MAILING DATE OF THE ADVISORY ACTION. IN NO EVENT WILL THE STATUTORY PERIOD FOR RESPONSE EXPIRE LATER THAN SIX MONTHS FROM THE DATE OF THIS FINAL ACTION.

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.


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6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dieu-Minh Le whose telephone number is (571) 272-3660. The examiner can normally be reached on Monday - Thursday from 8:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Scott Baderman can be reached on (571)272-3644.

The Tech Center 2100 phone number is (571) 272-2100. The Central FAX number is (571)273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
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